THE PSYCHODIDAE OF THE PACIFIC COAST.

By Trevor Kincaid, University of Washington.

Through the kindness of the Rev. A. E. Eaton, the British authority on the Psychodidæ, the writer has been made acquainted with the classification of the family as accepted by European students. In Europe there are five genera, which are tabulated by Halliday in the following manner:

(a) With two simple nervures between the forked veins
  (b) Proboscis compressed, with maxillæ nearly as long. Wings pointed exactly at the end of the second simple vein. *Psychoda.*
  (bb) Proboscis with broad, pointing liplets. Maxillæ obsolete. Labrum shorter than the labium.
  (c) Wings broad, ovate, with an upward bellying sinus in the middle in the male. *Ulomyia.*
  (cc) Wings even in both sexes. *Pericoma.*
(aa) With one simple nervure between the forked veins
  (b) Hindermost vein not much shorter than the rest. Antennæ, with obconical joints, 14-jointed. *Trichomyia.*
  (bb) Hindermost vein abbreviated. Antennæ, with linear joints, 15-jointed. *Sycorax.*

To these five genera, a sixth, *Phlebotomus*, has been added. This genus seems to be more or less intermediate between Halliday's primary divisions of the family, since Mr. Eaton states that it has two simple veins between the forked nervures, but is otherwise more closely related to *Sycorax* and *Trychomyia*.

Mr. Eaton records forty-one species of Psychodidæ for the British Islands, distributed as follows: *Ulomyia* (1 sp.); *Pericoma* (32 sp.); *Psychoda* (6 sp.); *Trichomyia* (1 sp.); *Sycorax* (1 sp).

All of the North American Psychodidæ so far described have been placed under the genus *Psychoda*, but there is little doubt that part of these will be referred to *Pericoma*.

It is the purpose of the present paper to describe a number of new species of Psychodidæ from various points on the Pacific coast and to record certain notes in connection with species previously described. In the discrimination of the species in the group very little use has apparently been made of the ventral plate of the female. The writer believes that this structure is of great importance in this connection.

Psychoda pacifica Kincaid. Ent. News, VIII, 6.

This species, originally described from Seattle, seems to range along the whole Pacific coast, since representatives have been examined from Alaska, Oregon, eastern Washington and California, which, although varying in some respects from the type specimens, seem to be specifically the same. The Alaska specimens were secured by the writer during the summer of 1898 at Sitka, Unalaska and the Pribilof Islands in Bering Sea. The variety found upon the Pribilofs differs considerably from the type form. They are on the average much smaller than the latter; the antennæ are 14-jointed, owing to the absence of one of the small terminal articles, and the inferior appendages of the male genitalia are much more strongly curved towards the tip. The Unalaskan and Sitkan examples resemble the types quite closely, about the only difference being that the wings are more acutely pointed than is usual in the latter. The Oregon specimens were taken at Corvallis, Oregon, during the month of June, 1898, while the Californian examples were included in a collection of Psychodidæ sent to the writer through the courtesy of Mr. R. E. Snodgrass from the Leland Stanford Junior University. From Professor Charles V. Piper, of the Washington Agricultural College, four specimens of *P. pacifica* were recently obtained, which were collected at Pullman, Washington, the specimens being dated from July 12 to July 27, 1898.

Psychoda olympia Kincaid. Ent. News, VIII, 6.

This is a *Pericoma*. The posterior bifurcation is much nearer the base of the wing than is the anterior one; the wing is pointed exactly at the tip of the first simple vein.

Psychoda sigma, n. sp.

♀ Body yellowish white, clothed with cream-colored hair; wings ovate, apex obtusely rounded, more than twice as long as broad, clothed with cream-colored hair upon the veins, except an indistinct S-shaped band of black across the middle; fringe quite dense and long, cream-colored, except two patches of black at the anterior and posterior terminations of the S-shaped discal band; length of wing 2.5 mm. Legs yellowish white, clothed with cream-colored hair and scales. Antennæ longer than the width of the wing, 14-jointed, with verticillate whorls of cream colored hair upon the nodes; joints 1-2 small, closely united; joints 3-13 globular, separated by slender pedicles; joint 14 minute. Ventral plate yellowish, very narrow at base, broadening towards the apex, which is produced in two divergent lobes; ovipositor yellow, short, almost straight.

♂ Smaller than ♀, with the black band upon the wings less clearly evident. Genitalia conspicuous, brown, clothed with long cream-colored hair. Inferior appendages 3-jointed; joint 1 stout, cylindrical; joint 2 twice as long as 1, slender, slightly swollen at base, curving upwards; joint 3 very slender, cylindrical tapering at apex.

Superior appendages not as long as basal joint of inferior: 2 jointed: joint 1 short; joint 2 tapering to an acute point.

Habitat: Olympia, Washington. June 24 to July 1, 1897. Many specimens were collected on a wall shaded by hop vines.

Psycho 'a schizura, n sp.

♀ Body whitish, clothed with gray hair on the thorax and silvery white on the abdomen. Legs whitish, becoming darker basally, clothed with white hairs and scales. Wing a little more than twice as long as broad, rather acutely pointed at the apex: hair upon the veins white and black, distributed in alternate patches, so as to give the surface of the wings a mottled appearance; well marked patches of black at the apices of the veins: fringe on posterior margin gray: length of wing 2.7 mm. Antennæ not as long as the width of wing, 15 jointed; basal joints not much larger than succeeding ones: joints 3-15 globular, separated by slender pedicles, which are about as long as the length of the nodes, each joint bearing a verticillate tuft of white hair. Ventral plate V shaped; ovipositer short.

♂ Smaller than ♀. Inferior appendages extremely long, 3-jointed: joint 1 stout, cylindrical; joint 2 almost twice as long as 1, enlarged at the base and tapering to the apex; joint 3 minute, clavate. Superior appendages as long as first joint of inferior, two jointed, tapering to an acute point.

Habitat: Seattle, Wash., August 13 to September 1, 1898. On windows.

Pericoma tridactila, n. sp.

♀ Body light brown, densely clothed with gray hair. Wings ovate, one and one half times as long as broad, apex moderately acute, clothed over the whole surface with gray hair, except an irregular band of white across the middle; fringe with basal third gray, remainder white, as long as the width of three cells: length of wing 2.5 mm. Legs light brown, clothed with gray hair and scales. Attennæ as long as the width of the wing, 16-jointed, with dense whorls of gray hair upon the nodes; joint 1-2 not larger than succeeding joints; joints 3 15 globular, separated by slender pedicles, which are slightly longer than the length of the nodes: joints 14-16 minutely, closely apposed. Ventral plate longer than broad, sides not emarginate, narrowing strongly towards the apex, which is bilobate.

♂ Genitalia conspicuous, clothed with gray hairs. Inferior appendages elongate, 2-jointed; basal joints stout, cylindrical, fused in the median line; second joint as long as first, straight, cylindrical, tapering to a rounded apex, and bearing at the tip three divergent, slender clavate processes, which are almost as long as the second joint itself. Superior appendages half as long as inferior, 2-jointed: joint 1 cylindrical, stout: joint 2 as long as first, slender, tapering to an acute point.

Habitat : Seattle, Washington, March 24 to June 15, 1898. Captured on a basement window.

In this species the bifurcations of the veins are so obscurely indicated that it was difficult to place generically : the anterior bifurcation is very close to the apex of the wing and the posterior one quite close to the base. The wings are folded roof-like in repose.

Pericoma sitchana, n. sp.

Body black, clothed with gray hair. Legs black, clothed with gray hair and scales. Wings ovate, broadly rounded at the tip, the first simple nervure terminating just before the apex ; bifurcations equidistant from the base of the wing ; hair upon the veins mixed black and white, the black being most pronounced at the apices of the veins and at the bifurcations; length of wing 2.5 mm.; fringe gray, with a patch of white at the apex. Antennæ one-half as long as the width of the wing, 16-jointed : joint 1 cylindrical ; joint 2 large, globular : joints 5-16 globular, separated by very short pedicels, the nodes sparsely clothed with gray hair. Gentalia not conspicuous, black, clothed with gray hair.

Habitat : Sitka, Alaska, July 12, 1897.

Pericoma triloba, n. sp.

Body brown, densely clothed with gray hair. Wings broadly ovate, not quite twice as long as broad, apex distinctly pointed, exactly at end of first simple nervure, clothed with gray hair upon the veins ; fringe dark gray ; length of wing 3 mm. ; posterior bifurcation much nearer the base of the wing than the anterior one. Legs brown, clothed with gray hair and scales. Antennæ one-half as long as the width of the wing, not much longer than the maxillary palpi : 17-jointed : joint 1 moderately large : joint 2 extremely large, subglobose towards apex, clothed with scattered whorls of long gray hair : joint 17 minute. Ventral plate broad at base emarginate laterally and terminating in three distinct lobes : ovipositor yellow, slightly curved.

♂ Gentalia inconspicuous, very hairy. Inferior appendages 2-jointed ; joint 1 large and stout ; joint 2 short, cylindrical, curving towards the apex, which is broadly and obliquely truncate. Superior appendages 1-jointed, short, straight, tapering from the base to an acute point.

Habitat : Seattle, Washington. Numerous specimens were secured in a railroad culvert situated on the campus of the university, March 12 to June 1, 1898.

Pericoma variegata, n. sp.

Body black, clothed with white hair, except a small patch of black hair near the base of the wing. Legs black, clothed with black and white hair. Wings rather acutely rounded at the tip, more than twice as long as broad ; hair upon the veins deep black,

except upon a broad transverse band near the base and an outwardly curved row of small patches just beyond the middle. which are white; fringe both on anterior and posterior margin. with alternate patches of white and black hair; length of wing 2.8 mm. Antennæ black, as long as the width of the wing. 17-joints; joints 1-3 stout, cylindrical, densely hairy; joints 4-17 small, fusiform, thinly clothed with long white hair. Ventral plate brown, shallowly emarginate at apex; ovipositor brown, rather long, almost straight.

Habitat: Seattle, Wash. Swept from bushes May 8, 1898.

Pericoma bipunctata, n sp

♀ Body brown, clothed with white hair. Legs brown, clothed with white hair, some of the latter being long. Wings broadly rounded at the tip, about twice as long as broad, clothed upon the veins with white and black hair, the black most pronounced at the apices of the veins and upon the bifurcations, the white most evident near the base and towards the apex, where there are small, irregular patches of this color; fringe black, except a spot extending from the apex of the third longitudinal vein to the end of the seventh and a small patch between the eighth and ninth vein, which are white; bifurcations equidistant from the base of the wing; 17-jointed; joint 1 rather large, cylindrical; joint 2 broader than 1. globular; joints 3-17 fusiform, clothed with scattered white hairs; joints 3-4 bear dorsally a row of strong erect black setæ. Ventral plate squarely produced, slightly emarginate at apex.

♂ Gentalia conspicuous, black, clothed with white hair.

Habitat: Seattle, Wash. (1♂); Santa Cruz Mountains, Cal. (1♂; 1♀); from the collection of Leland Stanford Junior University.

Pericoma furcata, n. sp.

♀ Body brown, clothed with white hair, among which a few black hairs are scattered. Wing twice as long as broad, narrowly rounded at the apex, which is pointed between the simple veins; viens clothed with black and white hairs as follows: Two curved rows of prominent black tufts across the middle of the wing, between which the hair is principally white; the area between the outer row of black tufts and the apex of the wing principally with black hair; area between the inner row of black tufts and base of wing, with mixed black and white hair; fringe black, with white tufts at apices of all the veins; bifurcations equidistant from the base of the wing; length of wing 2.8 mm. Antennæ as long as the width of the wing, 16-jointed; joints 1-2 slightly larger than the succeeding ones; joints 3-16 swollen at base and bearing loose tufts of black hair. Legs with alternate annulations of black and white hair. Ventral plate dilated basally, and strongly produced in the middle, the production bilobed and angularly emarginate at apex; ovipositor moderately long, almost straight.

Habitat: Pullman, Wash. Collected by Mr. R. W. Doane, of the Washington Agricultural College.

Pericoma truncata, n. sp.

♀ Body brown, densely clothed with mixed white and dark brown hair. Wings ovate, broadly rounded at the tip, not quite twice as long as broad; hair upon the veins principally dark brown, with a rather large patch of white near the middle of the wing and its apex; fringe dark brown, on posterior margin as long as the width of three cells and with small patches of white hair alternating with the brown tufts at the apices of the veins; bifurcations of the veins equidistant from the base of the wing; length of wing 4 mm. Legs brown, clothed with brown hair and scales, interspersed with a few longer white hairs. Antennæ black, not quite as long as the width of the wing, 17-jointed; joint 1 rather large, cylindrical; joint 2 large, globose; joints 3-16 fusiform, covered with scattered hairs; joint 17 minute; ventral plate longer than broad, broadly truncate at the apex; ovipositor yellow, long and slender, strongly curved.

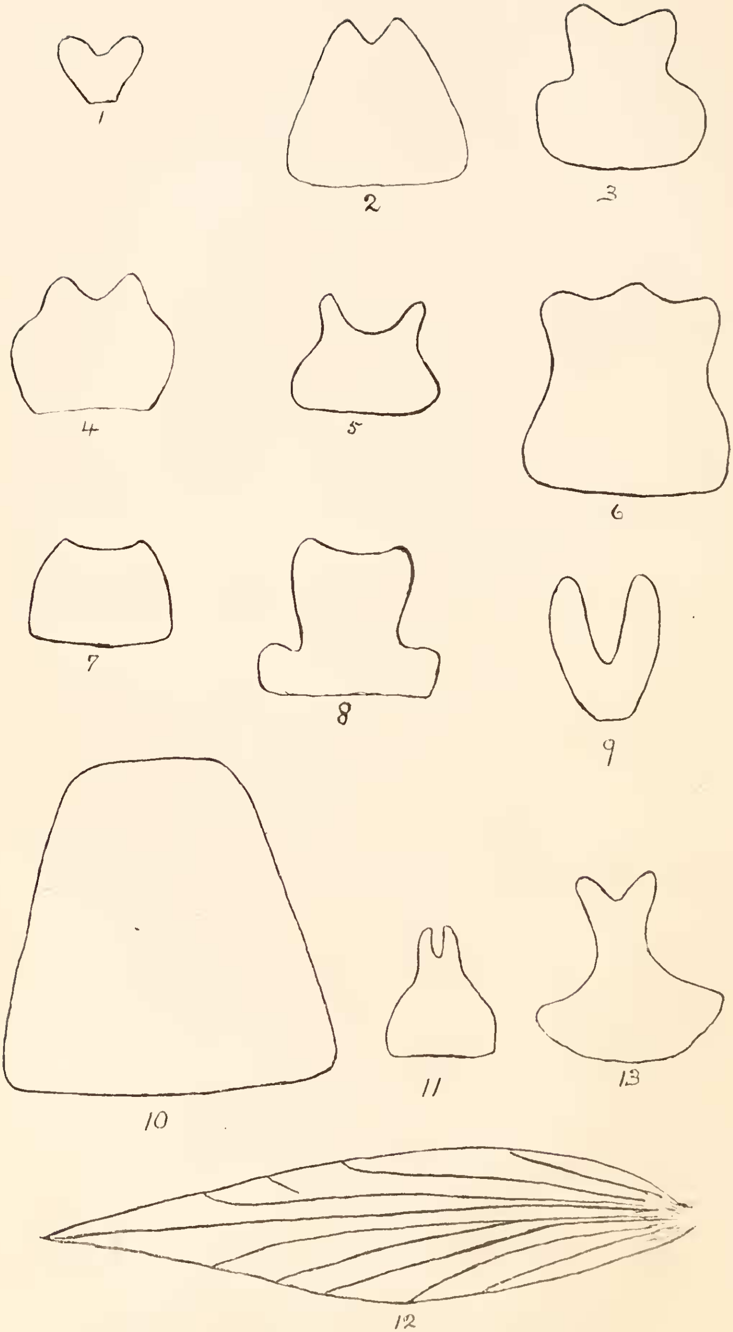
Habitat: Palo Alto, Cal. From the collection of the Leland Stanford Junior University. Collected by Mr. R. E. Snodgrass.

Sycorax lanceolata, n. sp.

♀ Body brown, clothed with brown hair, which appears black in some lights. Wings extremely narrow, four times as long as broad, apex sharply acuminate and pointed exactly at the tip of the single simple nervure; anterior and posterior bifurcations distant from the base of the wing, respectively, two-thirds and one-third the wing's length; veins unevenly clothed with brown hair, similar to that upon the body; fringe very heavy, colored similarly to the hair upon the veins, on the posterior margin somewhat shorter: length of wing 2 mm. Legs brown, clothed with brown hair, except on the basal joints of all the tarsi, which are covered with white hair Antennæ short, stout, about three-fourths as long as the width of the wing, 15-jointed; joint 1 cylindrical; joint 2 globose, larger than succeeding joints; joints 3-15 linear and sparsely clothed with brown hair. Ventral plate elongate, broad at the base, and narrowed towards the apex, which is bilobed and linearly emarginate.

Habitat: Palo Alto, Cal. August 3, 1898. One specimen; Santa Cruz Mountains. August 9, 1895. Three specimens; collection of the Leland Stanford Junior University. Almota, Wash. Ten specimens, collected by Mr. R. W. Doane, of the Washington Agricultural College.

This interesting species belongs to Halliday's second division of the Psychodidæ, containing genera with a single simple



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vein between the forked nervures, and since it agrees in every essential generic character with Sycorax it has been referred to that group, although a comparison with the European material may necessitate the erection of a new genus for its reception.

EXPLANATION OF PLATE.

Figs. 1–11. Ventral plate of Psychodidæ. (1.) *Psychoda sigma*, n. sp. (2.) *Pericoma tridactyla*, n. sp. (3.) *Pericoma olympia* Kinc. (4.) *Psychoda pacifica* Kinc. (5.) *Psychoda elegans* Kinc. (6.) *Pericoma triloba*, n. sp. (7.) *Pericoma variegata*, n. sp. (8.) *Pericoma bipunctata*, n. sp. (9.) *Pericoma schizura*, n. sp. (10.) *Pericoma truncata*, n. sp. (11.) *Sycorax lanceolata*, n. sp. Fig. (12.) Wing of *Sycorax lanceolata*, denuded of hair to show venation. (13.) Ventral plate of *Pericoma furcata*, n. sp.

ON TWO NEW AND ONE PREVIOUSLY KNOWN FLEA.

By C. F. Baker, Auburn, Ala.

Pulex howardii Baker. In the group which includes this flea and *fasciatus* and its allies, the males determine the species. For this reason *wickhami* and *gilletei* are not well founded. They were separated on characters whose values could not have been correctly estimated at the time. They should be reduced to synonyms of *howardii*.

Pulex irritans, var dugesii, n. var.

Dr. Duges has sent me a flea taken on *Spermophilus mucrourus* at Guanajuato, Mex., which agrees very closely in its characters with *P. irritans*, but is smaller, paler and the legs are more slender. In these particulars it approaches *pallidus*, but the male claspers are large and half oval, and the mandibles about equal the fore coxæ. Named for its discoverer, who has been diligently investigating the Mexican Siphonaptera for many years.

Hystrichopsylla americana, n sp.

Length 3.25 mm. A typical *Hystrichopsylla*, and closely resembling *obtusiceps*. Color deep chestnut brown. Head not angulated in front above, but evenly rounded from occiput to mouth. Head comb not perpendicular, as in *obtusiceps*, but on lower margin of head, and consisting of fourteen spines on each side. Pronotal comb of about fifty small, slender, close-set teeth. First abdominal segment only with a comb of about forty teeth. Abdomen very heavily bristled, as in *obtusiceps*. Seventh dorsal segment with ten